

Ground-water flow directions are likely controlled by nonnative materials such as demolition debris and foundations; however, based upon available ground water elevation data, the general flow direction is north-to-northwest.

The unconsolidated sediments in the vicinity of the facility generally do not transmit substantial quantities of water; however, discontinuous sand and gravel deposits as well as the fill material present in some areas produce limited quantities of water. The approximate depth to ground water at the facility ranges from 2 to 12 feet. Discontinuous sandy silt lenses form a perched water-bearing unit in the vicinity of the past landfill area (Geraghty & Miller, 1991).

Ground water was not encountered in three of the borings drilled at the north, east, and southeast property boundaries. At some locations across the facility, excavations for the foundations of buildings have been cut down to the top of or into bedrock. These foundations cut into the bedrock apparently act as a barrier to ground-water flow. For example, ground-water movement toward the northeast corner of the facility appears to be prevented by the presence of building foundations along the east side of the flue area. The exact influence of the presence of building foundations on ground-water flow in the unconsolidated sediments in other areas of the facility is unknown (Geraghty & Miller, 1990).

2.7 RECEPTORS

The UCAR facility is located in a mixed industrial and residential area in Lakewood, Ohio, with residences less than 1/4 mile from the facility to the west and north. No sensitive environments are found within a 2-mile radius of the facility. The facility is monitored 24 hours a day by security guards and on-site access is restricted by a fence surrounding the entire facility. Therefore, the possibility of public contact with contaminated soils is low.

As discussed in Section 2.6, ground water does not occur as a uniform water table underneath the facility. Ground-water depth occurs at approximately 2 to 12 feet at the facility. No ground-water supply wells were identified during the PA/VSI within a 2-mile radius of the facility. The City of Lakewood draws its drinking water exclusively from Lake Erie at four intake points at least 3 miles from the facility (City of Cleveland, 1990).

The nearest surface water body to the facility is Lake Erie, which is approximately 1 mile away. A release of hazardous wastes or hazardous constituents from a SWMU or AOC to the river

is highly unlikely because of the sound secondary containment of SWMUs and monitoring of the facility's wastewater effluent. Currently, the combined sanitary system at the facility discharges to sewers where the combined wastewater goes to Lakewood's POTW before it is discharged to Lake Erie. Therefore, it is unlikely that any release of contaminants to a nearby storm sewer will directly affect Lake Erie's surface-water quality.

There are residences close to the facility in the west and north. The prevailing wind direction in the area is from the south. Under these conditions, releases of hazardous constituents to the air would be directed to the north, towards those homes. The primary source of air emission is the crushing and milling processes in the BN operations. No release of air contaminants from these processes has been documented. All these processes have pollution-control equipment such as dust or particulate collection devices. There is a low potential of releasing hazardous constituents to the air unless one of those devices malfunctions.

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the 17 SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of release, and PRC observations.

SWMU 1

Hazardous Waste Storage Pad A

Unit Description: This unit is located in the southwestern portion of the facility, north of the main electrical transformer pad, and is 16 feet wide, 20 feet long and 6 inches thick. Figure 2 presents the location of this unit, and Photograph 1 in Attachment B depicts this unit. The pad is constructed of reinforced concrete and is surrounded by a 7-foot-high steel-wire fence, which is always locked. The unit is used to store hazardous waste drums and is currently operated by Advanced Ceramics. The pad has 4-inch-high concrete curbing and an elevated entrance ramp. The unit has been used for storing wastes generated from various processes, which include Grafoil production and fabrication, ceramics production, degreasing operations, Karbate production, and cleaning and maintenance operations, within the facility (ENSR, 1989).

Date of Startup: 1980

Date of Closure: Pad A was one of the four waste management units to be closed in the closure plan submitted to Ohio EPA in March 1989 (ENSR, 1989). The pad was steam cleaned and the rinsate was sampled during the closure operation (PRC, 1991). Advanced Ceramics expects to use it as a generator accumulation area after its closure.

Wastes Managed: Facility records dating back to 1981 indicate that the pad was used to store the following wastes: waste 1,1,1-trichloroethane mixture, waste acetone mixture, waste toluene mixture, waste methanol mixture, waste MEK mixture, waste stoddard solvent, waste corrosive solids, and waste paint mixtures (ENSR, 1989). The primary waste managed at this unit is a spent methanol mixture (PRC, 1991).

Release Controls: The concrete pad is 6 inches thick and slopes to a 18-inch diameter, 23-inch deep sump. The pad also has 4-inch-high concrete curbing and an elevated entrance ramp. The unit is enclosed with a 7-foot-high steel wire fence. The sump and the curbing hold approximately 700 gallons (Frye, 1992).

History of Release: No release has been documented from this unit.

Observations: One drum was observed on the pad at the time of inspection. No joints or cracks were observed in the pad during the VSI. The unit appeared to be in good condition. No evidence of release from the unit was observed.

SWMU 2**Hazardous Waste Storage Pad B**

- Unit Description:** This unit is located in the southwestern portion of the facility, south of Building 7, and is 13.5 feet wide, 17.5 feet long, and 6 inches thick. Figure 2 presents the location of this unit, and Photograph 2 in Attachment B depicts this unit. The pad is constructed of reinforced concrete and is surrounded by a 6-foot-high steel-wire fence, which is always locked. The unit is a storage area for hazardous waste drums and is operated by UCAR. The pad has 4-inch-high concrete curbing with an elevated entrance ramp. The unit stores wastes generated from various processes, which include Grafoil production and fabrication, ceramics production, degreasing operations, Karbate production, and cleaning and maintenance operations, within the facility (ENSR, 1989).
- Date of Startup:** 1980
- Date of Closure:** Pad B was one of the four waste management units to be closed in the closure plan submitted to Ohio EPA in March 1989 (ENSR, 1989). The pad was steam cleaned and the rinsate was sampled during the closure operation (PRC, 1991). UCAR expects to continue to use it as a generator accumulation area after its closure.
- Wastes Managed:** Facility records dating back to 1981 indicate the pad was used to store the following wastes: waste 1,1,1-trichloroethane mixture, waste acetone mixture, waste toluene mixture, waste methanol mixture, waste MEK mixture, waste stoddard solvent, and waste corrosive solids (ENSR, 1989). The primary wastes currently at this unit are waste adhesives, waste MEK mixture, and a waste oil and water mixture (PRC, 1991).
- Release Controls:** The concrete pad is 6 inches thick and slopes to a 15-inch diameter, 19-inch-deep sump. The pad also has 4-inch-high concrete curbing and an elevated entrance ramp. The unit is enclosed with a 6-foot-high steel wire fence. The sump and the curbing hold approximately 560 gallons (Frye, 1992). No drain is present at the pad.
- History of Release:** No release has been documented from this unit.
- Observations:** Ten 55-gallon drums and one 30-gallon drum, all with hazardous waste labels, were observed on the pad during the PA/VSI. No joints or cracks were observed in the pad during the VSI. The unit appeared to be in good condition. No evidence of release from the unit was observed.

SWMU 3**Hazardous Waste Storage Pad C**

- Unit Description:** This unit is located in the southwestern portion of the facility, south of hazardous waste storage Pad B (SWMU 2), and has an area of approximately 14 feet by 60 feet. Approximately one-third to one-half of the pad is level and the rest is sloping gently towards the south (Frye, 1992). Figure 2 presents the location of this unit, and Photograph 3 in Attachment B depicts this unit. The pad is constructed of concrete. The unit was a storage area for hazardous waste drums. The unit has been used

for the storage of wastes generated from various processes, which include Grafoil production and fabrication, ceramics production, degreasing operations, Karbate production, and cleaning and maintenance operations within the facility (ENSR, 1989).

Date of Startup: 1980

Date of Closure: Pad C was one of the four waste management units to be closed in the closure plan submitted to Ohio EPA in March 1989 (ENSR, 1989). Pad C has not been used since 1982.

Wastes Managed: Facility records dating back to 1981 indicate the pad was used to store the following wastes: waste acetone mixture, waste toluene mixture, waste methanol mixture, waste MEK mixture, and waste stoddard solvent (ENSR, 1989).

Release Controls: The unit is a concrete pad with no curbing, containment, or fence.

History of Release: During the closure operations of Pad C, analyses of soil samples at the pad indicated soil contamination at the area. Additional soil sampling, as required by Ohio EPA, is being performed in the vicinity of the pad to delineate the extent of vertical and horizontal contamination (PRC, 1991).

Observations: No drums were observed on the concrete pad. No joints or cracks were observed in the pad during the VSI. The unit appeared to be level and in good condition. No evidence of release from the unit was observed.

SWMU 4

Hazardous Waste Storage Tank D

Unit Description: The unit is located in the central portion of the facility, next to Building 69. Figure 2 presents the location of this unit, and Photograph 4 in Attachment B depicts this unit. The unit is a 12,000-gallon mild steel horizontal tank 10 feet in diameter and 20.5 feet long. The tank was primarily used to store wastes generated from the Karbate process (ENSR, 1989).

Date of Startup: 1976

Date of Closure: Tank D was one of the four waste management units to be closed in the closure plan submitted to Ohio EPA in March 1989 (ENSR, 1989). The tank has not been used since 1988, when the company sold the Karbate process. During the closure process, the liquid contents of the tank were pumped out in 1989; the solid contents of the tank and the tank itself were removed in spring 1990. The solid wastes of the tank were incinerated.

Wastes Managed: The unit stored liquid and solid wastes related to the Karbate process. The liquid waste was a mixture of alcohol-based and phenolic-based resin, water, and acetone. The solid waste was a mixture of resins. Individual compounds contained in the tank included phenol, formaldehyde, acetone, and phthalic anhydride (ENSR, 1989).

Release Controls: The tank has a concrete containment area, 13 feet wide, 22 feet long, and 22 inches high, and is elevated by three 1.5-foot-thick concrete support columns.

History of Release: No release has been documented from this unit.

Observations: The tank was removed in 1990, and was not observed during the PA/VSI. The concrete support columns remained on site at the time of the VSI. No evidence of release from the unit was observed.

SWMU 5

Flue Area

Unit Description: The unit is located in the central portion of the facility, east of Buildings 7 and 18, north of Buildings 6D and 69, west of Buildings 6 and 25, less than 100 feet south of Madison Avenue. Figure 2 presents the location of this unit, and Photographs 5 through 7 in Attachment B depict this unit and its sump system. The unit occupies approximately 210 feet by 270 feet. The unit is a paved parking lot that is underlain by a series of tunnel-like flues that were used in the early phases of facility operation to transfer heat and volatile organics during the carbon-making process. A series of buildings previously at this location was demolished because of changes in facility operations.

Date of Startup: 1957

Date of Closure: 1976

Wastes Managed: During a period ending about September 1976, a section of the flue system was used as a holding tank for used phenol-formaldehyde, various furfuryl alcohol resins, and volatile hydrocarbon solvents such as acetone and toluene (Geraghty & Miller, 1991). These liquid wastes were periodically pumped out of the unit for disposal offsite by a specialized waste disposal contractor (PRC, 1991).

Release Controls: At the time when the flue area was used as a holding tank, there was no documented secondary containment. A sump system was installed to control any fluid accumulation in the Flue Area due to precipitation and surface water that infiltrated the surface of the parking lot. The sump was constructed during 1979-80 by drilling to a depth of approximately 11 feet and placing a 24-inch-diameter corrugated pipe within the boring. The pipe has holes at regular intervals to allow liquid to flow into it. A 2-inch-diameter PVC pipe is located within the corrugated pipe and discharges the collected liquid to a sanitary sewer. A pump with a float trigger draws the liquid out of the sump when the fluid reaches a certain level with the corrugated pipe (Geraghty & Miller, 1991). The facility sampled the liquid in the sump approximately once every year (Frye, 1992).

History of Release: Soil and ground-water samples from an environmental assessment study and ground-water investigation at the facility revealed the presence of a limited number of VOCs in the soils and ground water. Figure 2 shows the locations of the soil borings and ground-water monitoring wells at the

Table 3

**Soil Samples' Analytical Results for Volatile Organic Compounds
from the Flue Area, May 1989**

Parameter	Units	GMB-22 (9-10.5)	GMB-23 (9-10.5)	GMB-24 (6-7.5)	GMB-27 (6-7.5)	GMB-27 (12-13.6)	GMB-28 (9-10.5)	GMB-29 (6-7.5)	GMB-30 (9-10.5)	GMB-31 (3-4.5)	GM-14 (9-10.5)	GM-15 (12-13.5)	GM-16 (12-13.5)	GM-17 ¹ (10.5-12)
VOCs														
Methylene Chloride:	µg/kg	18	13	17	94	45	22	87	18	38	13	164	31	17
Trichlorofluoromethane:	µg/kg				7J	8J		10J					12J	
1,2-Dichloroethene:	µg/kg	5		5J	7			4J						
Trichloroethene	µg/kg				300	8		12						
Toluene:	µg/kg						4J	16,000*						
Benzene:	µg/kg							32						
Ethylbenzene:	µg/kg							42						
1,1,1-Trichloroethane:	µg/kg				8									
Vinyl Chloride:	µg/kg													
Total:	µg/kg	23	13	22	416	61	26	16,187	18	38	13	164	43	17

Note: Blank spaces indicate that compound is present below detectable levels in concentrations.

* Compound amount taken from 1:6.4 dilution

J Compound is present, but below the listed detection limit.

¹ GMB refers to a soil boring and GM refers to a monitoring well. See Figure 2 for locations of soils borings and monitoring wells.

facility. VOCs detected in the soil samples included methylene chloride, trichloroethene, toluene, and trichlorofluoromethane. Table 3 presents the soil samples' analytical results for VOCs. VOCs detected in the ground-water samples included acetone, methyl-2-pentanone, and trichloroethene.

Only one VOC compound from the ground-water samples was detected at levels above the maximum contaminant level (MCL) for the respective compound. Tables 4 and 5 present the ground-water samples' analytical results throughout the facility. The presence of VOCs in the soils and ground water at or around the flue area may be related to past use of the area as a holding tank for used resins and solvents (Geraghty & Miller, 1990).

Observations: A paved parking lot was observed at the location of the unit, and the flues underlying the unit were not observed. No evidence of release was observed.

SWMU 6 Former Landfill Area

Unit Description: The unit is located at the southwestern corner of the facility and occupied an area of approximately 80 feet by 113 feet. Figure 2 presents the location of this unit, and Photograph 8 in Attachment B depicts this unit. The unit is graded and covered with grass. The landfill was used as a disposal area for construction debris from demolished buildings, miscellaneous scrap carbon and graphite parts from assorted previous product lines, and barium alloy powdered wastes from the Kemet business. Drums of the barium alloy powdered wastes were hauled off the landfill after the Kemet business closed (PRC, 1991). Most of the other materials were hauled off-site for disposal or recycling. However, some of these materials are still buried (Geraghty & Miller, 1990).

Date of Startup: 1920s

Date of Closure: 1973

Wastes Managed: The landfill was used as a disposal area for construction debris from demolished buildings, miscellaneous scrap carbon and graphite parts from assorted previous product lines, and barium alloy powdered wastes from the Kemet business.

Release Controls: During the time the landfill was used, no secondary containment was documented. Five ground-water monitoring wells were installed around the unit during an environmental site assessment and ground-water investigation at the facility (Geraghty & Miller, 1990). Those wells are sampled by the facility once every 2 years (PRC, 1991).

History of Release: Soil samples from an environmental assessment study and ground-water investigation at the facility revealed the presence of many metals and inorganic constituents, including arsenic, barium, chromium, and mercury. The concentrations of these constituents varied, but generally ranged between 1- and 3-digit ppm levels, with the highest concentrations

Table 4

Ground-Water Analytical Results for Metals, Inorganics, and Polychlorinated Biphenyls, May 1989

Parameter	Detection Limits	Units	GM-3	GM-6	GM-8	GM-9	GM-10	GM-11	GM-12	GM-13	GM-14	GM-15	GM-16	GM-17 ¹	Field Blank	Duplicate GM-3
Biochemical Oxygen Demand	1.00	mg/L	8.7	NA	8.7	8.1	5.7	6.3	6.9	6.9	1.5	1,990	23.2	11.7	ND	6.9
Cyanide	0.01	mg/L	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CDD	10.0	mg/L	ND	NA	ND	ND	24	14	26	24	62	3,380	58	74	ND	18
Specific Conductance		umhos/cm	975	NA	868	1,040	1,710	957	808	1,350	2,990	4,350	790	2,940	7.0	973
Formaldehyde	0.011	mg/L	ND	ND	ND	ND	ND	<0.220	ND	ND	NA	ND	0.014	ND	ND	ND
Nitrate (as N)		mg/L	0.371	NA	0.102	0.183	0.202	6.45	0.113	0.099	1.65	0.084	0.207	0.15	0.14	0.447
Oil and Grease	5.00	mg/L	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH		units	7.1	NA	7.5	7.2	7.1	7.1	7.5	7.1	6.7	6.4	7	6.5	6.6	7.4
Phenol	0.005	mg/L	ND	NA	ND	ND	ND	ND	ND	ND	ND	136	0.027	0.014	ND	ND
TOC	1.00	mg/L	2.1	NA	2.64	5.12	20.3	3.19	4.54	27	2.44	1,130	9.38	11.1	ND	2.28
Dissolved:																
Silver	0.01	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	0.20	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	0.01	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium	0.20	mg/L	ND	0.368	ND	ND	ND	ND	0.261	ND	ND	0.785	ND	ND	ND	ND
Boron	0.02	mg/L	0.186	0.651	0.184	1.32	4.94	0.405	0.231	2.37	2.4	1.39	0.747	2.39	ND	0.185
Cadmium	0.005	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	0.01	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper	0.025	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	0.0002	mg/L	ND	ND	ND	ND	0.00021	ND	ND	ND	ND	ND	0.0003	ND	ND	ND
Nickel	0.04	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.0482	ND	ND	ND	ND	ND
Lead	0.005	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	0.025	mg/L	<.025	<.005	<.025	<.005	<.025	<.005	<.005	<.025	<.005	<.025	<.005	<.025	<.005	<.025
Zinc	0.02	mg/L	ND	0.0396	ND	ND	ND	ND	ND	ND	0.203	0.0218	ND	0.138	ND	ND
POLYCHLORINATED BIPHENYLS																
PCB 1016		µg/L	<0.500	NA	<.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
PCB 1221		µg/L	<0.500	NA	<.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
PCB 1232		µg/L	<0.500	NA	<.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
PCB 1242		µg/L	<0.500	NA	<.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
PCB 1248		µg/L	<0.500	NA	<.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
PCB 1254		µg/L	<1.00	NA	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
PCB 1260		µg/L	<1.00	NA	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00

ND = Not Detected Above Listed Detection Limit

NA = Not Analyzed

< = Not Detected Above Value Listed (Detection Limit)

GM-6 Constituents Not Analyzed Due to Slow Well Recovery and Lack of Sample Volume

¹ GM refers to a monitoring well. See Figure 2 for locations of monitoring wells.

Source: Geraghty & Miller, 1990

Table 5

Ground-Water Analytical Results for Volatile Organic Compounds, May 1989

Parameter	Detection Limit	GM-3	GM-6	GM-8	GM-9	GM-10	GM-11	GM-12	GM-13	GM-14	GM-15	GM-16	GM-17 ¹	Field Blank	Duplicate GM-3
VOCs:			ND	ND								ND		ND	
Methylene Chloride	5	3J			5J	20	15	14	7	7	13J		9		6
Ethylbenzene	10								3J						
1,1-Dichloroethane	5									8	40		47		
1,1,1-Trichloroethane	5									7					
Trichloroethene	5									22	28		3J		
1,2-Dichloroethene (total)	5										15J				
Toluene	5										370				
Chloroform	5												5J		
Acetone	NP										49,000				
4-methyl-2-pentanone	NP										340				

All values are in µg/l

J = Compound is present, but below the listed detection limit

ND and/or blank spaces indicate no detection

NP = Not provided

¹ GM refers to a monitoring well. See Figure 2 for locations of monitoring wells.

Source: Geraghty & Miller, 1990

Table 6

Soil Samples' Analytical Results for Metals, Inorganics, and Polychlorinated Biphenyls from the Former Landfill Area, May 1989

Parameter	Units	GM-10 (6-7.5)	GM-11 (9-10.5)	GM-12 (12-13.5)	GM-13 (12-13.5)	GM-13 (15-16.5)	GMB-4 (6-7.5)	GMB-5 (6-7.5)	GMB-7 (12-13.5)	GMB-8 (9-10.5)	GMB-9 (9-10.5)	GMB-10 (12-13.5)	GMB-11 (9-10.5)	GMB-12 (9-10.5)	GMB-13 (12-13.5)	GMB-14 ¹
Aluminum	mg/kg	4,110	6,260	3,160	7,360	4,080	9,150	5,440	9,920	9,400	11,500	10,100	10,400	4,120	4,140	12,400
Arsenic	mg/kg	11.2	7.2	13.2	10.2	15	10.8	9.5	7.50	7.56	8.16	7.85	6.72	6.71	5.28	6.19
Barium	mg/kg	20.4	35.7	12.2	48.9	37.4	43.5	37	36.9	40.7	62.7	39.3	69.3	163	18.6	43.8
Boron	mg/kg	22.2	9.02	5	8.82	6.96	8.4	4.8	3.6	2.4	<2	<2	<2	16.6	<0.2	3.4
Cadmium	mg/kg	<.5	0.774	0.56	1.42	<.5	<.5	1.91	<.5	<.5	<.5	<.5	<.5	17.1	<.5	<.5
Chromium	mg/kg	6.72	11.2	5.68	12.4	7.96	14.2	9.01	14.6	14	17.9	15.3	15.8	28.6	6.94	18.2
Conductivity	umhos/cm	400	296	215	356	248	320	529	207	240	310	249	52	348	320	276
Copper	mg/kg	21.7	20.7	17.8	22.9	31.3	22	26	22.1	20.4	26.1	22	22.3	2620	16.8	23.4
Lead	mg/kg	7.83	10.2	6.99	14	14.7	12	10.6	11.8	10.4	16	14.1	13.5	341	7.6	12
Mercury	mg/kg	0.149	0.149	<.1	0.25	0.67	0.198	0.25	<.1	<.1	<.1	<.1	<.1	45.4	0.241	<.1
Nickel	mg/kg	16.8	25.8	14.3	27.5	18.7	26.9	20	27.2	25	32.5	28.1	27	91.7	15.6	30.4
Nitrate (as N)	mg/kg	0.76	0.224	0.264	<0.080	3.17	1.1	<0.080	0.329	<0.080	<0.080	0.141	0.39	<0.080	0.103	0.1
Oil and Grease	mg/kg	408	504	294	1,550	683	230	264	105	1,090	<50.0	140	<50.0	210	57.9	192
pH	units	8	8.3	8.5	8.5	8.7	8.6	8.0	8.1	7.8	7.5	8.1	8.0	8.0	8.1	8.1
Selenium	mg/kg	<.5	<.5	<.5	<.5	<.5	<.5	1.4	<.5	<.5	<.5	<.5	<.5	<.5	<2.5	<2.5
Silver	mg/kg	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	3.2	<.1	<.1
% Solids at 103°C	%	78.2	85.7	87	86.7	82	88.2	82.4	86.2	84.3	78.9	87.2	80.9	73.9	83.1	86.3
Total Cyanide	mg/kg	<.250	<2.5	<0.125	<0.125	<0.125	<0.250	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125
TOC	mg/kg	3.15	3.02	3.3	7.19	3.11	7430	1650	24600	7680	2910	13300	4270	882000	11100	7150
Total Recoverable Phenolics	mg/kg	<0.125	<.1	<0.125	0.139	<0.125	<0.125	<0.125	<0.125	0.774	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125
Zinc	mg/kg	61.7	80.9	80.2	79.1	60.9	67.8	63.2	73.6	66	83.5	60.8	71	344	48.2	70.4
POLYCHLORINATED BIPHENYLS																
PCB 1016	mg/kg	NA	NA	NA	NA		<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
PCB 1221	mg/kg	NA	NA	NA	NA		<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
PCB 1232	mg/kg	NA	NA	NA	NA		<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
PCB 1242	mg/kg	NA	NA	NA	NA		<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
PCB 1248	mg/kg	NA	NA	NA	NA		<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05	<.05
PCB 1254	mg/kg	NA	NA	NA	NA		<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1
PCB 1260	mg/kg	NA	NA	NA	NA		<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1	<.1

NA = Not analyzed

¹ GMB refers to a soil boring and GM refers to a monitoring well. See Figure 2 for locations of soil borings and monitoring wells.

Source: Geraghty & Miller, 1990

observed near the center of the landfill. Table 6 shows the soil samples analytical results for metals, inorganics, and polychlorinated biphenyls (PCBs) from the former landfill area. Low levels of a few volatile organic compounds generally ranging between 1- and 2-digit ppb levels, were detected in the soil samples. VOCs detected in the soil samples included methylene chloride, trichlorofluoromethane, trichloroethene, toluene, 1,1,1-trichloroethane, 1,2-dichloroethene and vinyl chloride. Distribution of the values for total VOC concentrations shows the highest levels near the center of the landfill. Table 7 shows the soil samples' analytical results for VOCs from the former landfill area. The VOCs, metals, and other inorganic constituents detected in the soil samples were not detected or not detected in significant quantities in ground-water samples (Geraghty & Miller, 1990).

Observations: The landfill was observed as a piece of land with grass growing on it. No evidence of release was observed.

SWMU 7 Former Incinerator Area

Unit Description: The unit is located at the southwestern corner of the facility, east of the former landfill area (SWMU 6), west of the main electrical transformer pad, and occupies an area of approximately 15 feet by 35 feet. Figure 2 presents the location of this unit, and Photograph 9 in Attachment B depicts this unit. Part of the unit is graded and covered with vegetation, but part of it is on barren ground. The unit was used as a test area for designing the incinerator and the use of the incinerator lasted approximately for 1 year. The incinerator was used to burn wood products and other solid wastes generated from various processes at the facility (PRC, 1991).

Date of Startup: Early 1970s

Date of Closure: 1973

Wastes Managed: The incinerator area was used to burn wood products and other solid wastes generated from various processes at the facility.

Release Controls: No release controls were identified during the active period of the unit.

History of Release: No documented releases were identified during the PA/VSI.

Observations: Part of the incinerator area was observed as a piece of grassy land. The other area was barren ground. No evidence of release was observed.

SWMU 8 Former Storage Area A

Unit Description: The unit is located south of Building 10b, west of the hazardous waste storage Pad B (SWMU 2), and is an underground concrete vault with a dimension of approximately 10 feet by 10 feet by 10 feet. Figure 2 presents the location of this unit, and Photograph 10 in Attachment B

Table 7

Soil Samples' Analytical Results for Volatile Organic Compounds from the Former Landfill Area, May 1989

Parameter	Units	GMB-4 (6-7.5)	GMB-5 (6-7.5)	GMB-7 (12-13.5)	GMB-8 (9-10.5)	GMB-9 (9-10.5)	GMB-10 (12-13.5)	GMB-11 (9-10.5)	GMB-12 (9-10.5)	GMB-13 (12-13.5)	GMB-14	GM-10 (6-7.5)	GM-11 (9-10.5)	GM-12 (12-13.5)	GM-13 (12-13.5)	GM-13 ¹ (15-16.5)
VOCs												ND	ND	ND	ND	ND
Methylene Chloride:	µg/kg	31	13	93	28	92	13	20	32	81	75					
Trichlorofluoromethane:	µg/kg									8J	10J					
1,2-Dichloroethene:	µg/kg								66							
Trichloroethene:	µg/kg		74					4J	12							
Toluene:	µg/kg			6	4J					5J						
Benzene:	µg/kg															
Ethylbenzene:	µg/kg															
1,1,1-Trichloroethane:	µg/kg						18			31	64					
Vinyl Chloride:	µg/kg						9J									
Total:	µg/kg	31	87	99	32	92	40	24	110	120	149	0	0	0	0	0

Note: Blank spaces indicate that compound is present below detectable levels in concentrations.

J = Compound present, but below the listed detection limit.

ND = Not detected

¹ GMB refers to a soil boring and GM refers to a monitoring well. See Figure 2 for locations of soil borings and monitoring wells.

Source: Geraghty & Miller, 1990.

depicts this unit. The vault was used a storage area for boron nitride particulates from the BN process. No one knows whether or not the vault has been emptied (PRC, 1991).

Date of Startup: Early 1970s

Date of Closure: 1986

Wastes Managed: Boron nitride particulates from the BN process.

Release Controls: No release controls were identified during the PA/VSI.

History of Release: No documented releases were identified during the PA/VSI.

Observations: The unit was not observed since it is an underground concrete vault. No evidence of release was observed.

SWMU 9

Former Storage Area B

Unit Description: The unit is located under a driveway between Buildings 7 and 18 and is an underground concrete vault with a dimension of approximately 10 feet by 10 feet by 10 feet. Figure 2 presents the location of this unit, and Photograph 11 in Attachment B depicts this unit. The vault was used as a storage area for the graphite and carbon dust from the wet machining process for the carbon brush operation. No one knows whether or not the vault has been emptied (PRC, 1991).

Date of Startup: 1940s

Date of Closure: 1964

Wastes Managed: Graphite and carbon dust from the wet machining process for the carbon brush operation.

Release Controls: No release controls were identified during the PA/VSI.

History of Release: No documented releases were identified during the PA/VSI.

Observations: The unit was not observed since it is an underground concrete vault. No evidence of release was observed.

SWMU 10

Former Used Oil and Empty Drums Storage Pad

Unit Description: The unit is located in the southwestern portion of the facility, just outside the northeastern corner of the former landfill area (SWMU 6). Figure 2 presents the location of this unit, and Photographs 12 through 13 in Attachment B depict this unit. The storage pad occupies an area of approximately 14 feet by 6 feet. Retaining walls were built on three sides of the pad and the unit is covered with a sheet of metal. The storage area is equally divided into three smaller areas (south, central, and north) with a

brick wall separating each area. Each area has two metal doors in the front facing the east. According to the facility representatives, the last time the unit was used for storing used oil was in June 1991 (PRC, 1991). The unit is currently used for storing raw material solvents such as ethylene glycol, kerosene, and turbinol.

Date of Startup: 1987

Date of Closure: June 1991

Wastes Managed: The unit was used to store hydraulic and lube oil from various processes at the facility until June 1991. Since then, the unit has been used to store raw material solvent.

Release Controls: The unit is on concrete pads and has a secondary concrete curb about 6 inches high in the front. The metal doors in the front are always kept closed.

History of Release: No documented releases were identified during the PA/VSI.

Observations: During the VSI, three drums with kerosene labels and one drum with a hazardous waste label were observed inside the southern area of the unit. The facility representative explained that the contents of the drum with the hazardous waste label were not hazardous and that the drum was waiting for the facility's contractor to analyze before the contractor would haul the drum offsite. However, the contractor required the facility to put the hazardous waste labels on all drums that were to be analyzed even if the wastes were not hazardous. Drums of raw material solvents were observed on pallets and stored in the central and the northern areas of the unit. No evidence of release was observed.

SWMU 11

Scrap Pit

Unit Description: The unit is located in the northwestern portion of the facility, just outside the northeastern corner of the former landfill area (SWMU 6). Figure 2 presents the location of this unit, and Photograph 14 in Attachment B depicts this unit. The scrap pit occupies an area of approximately 10 feet by 20 feet and is on barren ground. Scrap metals from various activities in the facility are accumulated in the pit. Some of the salvageable metals are hauled offsite once every year for reclamation.

Date of Startup: Unknown

Date of Closure: The unit is operational.

Wastes Managed: Scrap metals from various activities in the facility.

Release Controls: No release controls were identified during the PA/VSI.

History of Release: No documented releases were identified during the PA/VSI.

Observations: Scrap metals were observed to be piled in the unit. No evidence of release was observed.

SWMU 12

Grafoil Process Neutralization System

Unit Description: The unit consists of three above-ground tanks located in the west central portion of the facility. Figure 2 presents the location of this unit, and Photographs 15 through 17 in Attachment B depict this unit. The three tanks are connected in series, with the first tank located outdoor west of Building 10 and tanks 2 and 3 located on the ground floor of Building 10. Sodium hydroxide is added to each tank to raise the pH of the acid-graphite mixture from the Grafoil process in steps before the neutralized wastewater is discharged to the sewer system. The pH of the acid mixture in the first 10,000-gallon tank is raised from 1 to 3. The pH of the mixture in the second 1,800-gallon tank was raised from 3 to 5 and the pH of the mixture in the third 1,800-gallon tank is raised to slightly above 7. The mixture then passes a 400-mesh screen to screen out the graphite particulates in the mixture before the neutralized wastewater is discharged to the sewer system. The graphite particulates, in the form of a wet sludge, are collected in a hopper and then moved to the landfill hopper (SWMU 15) before they are hauled offsite.

Date of Startup: 1965

Date of Closure: The unit is currently operational.

Wastes Managed: Acid-graphite mixture from the Grafoil process before it is discharged to the sewage system. Toxicity Characteristic Leaching Procedure (TCLP) analytical results on the wet sludge are presented in Table 8.

Release Controls: The first tank was on a concrete floor surrounded by a 25- by 16- by 3-foot-high concrete wall. An 18- by 20- by 18-inch sump is inside the northeastern corner of the wall. The second and the third tanks have a concrete pit, 25- by 12- by 6-foot deep, underneath to contain any spills from the tanks.

History of Release: No documented releases were identified during the PA/VSI.

Observations: The tanks appear to be structurally sound. No evidence of release was observed.

SWMU 13

Boron Nitride (BN) Process Neutralization System

Unit Description: The unit consists of one tank located on the ground floor at the southeastern corner of Building 10 on the west central portion of the facility. Figure 2 presents the location of this unit, and Photograph 21 in Attachment B depicts this unit. The tank is a 1,100-gallon above-ground vertical cylindrical tank made of reinforced fiberglass standing on a steel stand approximately 2 feet above the concrete floor. The effluent from the acid-wash process is treated in the neutralization tank with sodium

Table 8

**Toxicity Characteristic Leaching Procedure Analytical Results
for the Sludge from the Grafoil Neutralization System**

	Result/Detection Limit	CF	Bias Corrected Result/Detection Limit	Regulatory Limit
Total Metals				
Arsenic	ND/0.01	0.51	ND/0.02	5
Barium	ND/0.2	1.08	ND/0.2	100
Cadmium	ND/0.02	1	ND/0.02	1
Chromium	ND/0.05	1.01	ND/0.05	5
Mercury	ND/0.005	1.2	ND/0.004	0.2
Lead	ND/0.1	1	ND/0.1	5
Selenium	ND/0.01	0.97	ND/0.01	1
Silver	ND/0.02	0.92	ND/0.02	5
Herbicides				
2,4-D	ND/0.002	0.75	ND/0.003	10
2,4,5-TP	ND/0.0004	0.97	ND/0.0004	1.9
Semi-Volatile Extractable Organics				
Cresol (o,m & p)	ND/0.04	0.63	ND/0.06	200
1,4 - Dichlorobenzene	ND/0.04	0.542	ND/0.07	7.5
2,4 - Dinitrotoluene	ND/0.04	0.470	ND/0.09	0.13
Hexachlorobenzene	ND/0.04	0.580	ND/0.07	0.13
Hexachlorobutadiene	ND/0.04	0.562	ND/0.07	0.5
Hexachloroethane	ND/0.04	0.505	ND/0.08	3
Nitrobenzene	ND/0.04	0.540	ND/0.07	2
Pentachlorophenol	ND/0.2	0.335	ND/0.6	100
Pyridine	ND/0.04	0.575	ND/0.07	5
2,4,5-Trichlorophenol	ND/0.04	0.448	ND/0.09	400
2,4,6-Trichlorophenol	ND/0.04	0.530	ND/0.08	2

Table 8 (Continued)

**Toxicity Characteristics Leaching Procedure Analytical Results
for the Sludge from the Grafoil Neutralization System**

	Result/Detection Limit	CF	Bias Corrected Result/Detection Limit	Regulatory Limit
Volatile Organics				
Benzene	ND/0.005	1	ND/0.005	0.5
Carbon Tetrachloride	ND/0.005	1	ND/0.005	0.5
Chlorobenzene	ND/0.005	1	ND/0.005	100
Chloroform	ND/0.005	0.9	ND/0.006	6
1,2-Dichloroethane	ND/0.005	1	ND/0.005	0.5
1,1-Dichloroethene	ND/0.005	0.9	ND/0.006	0.7
Methylethyl Ketone	ND/0.05	1	ND/0.05	200
Tetrachloroethene	ND/0.005	1	ND/0.005	0.7
Trichloroethene	ND/0.005	1	ND/0.005	0.5
Vinyl Chloride	ND/0.01	1.1	ND/0.01	0.2
Chlorinated Pesticides				
	Result (mg/l)	Detection Limit	Regulatory Limit	
Lindane	ND	0.0001	0.4	
Heptachlor	ND	0.0001	-	
Heptachlor Epoxide	ND	0.0001	-	
Endrin	ND	0.0005	0.02	
Chlordane	ND	0.0005	-	
Methoxychlor	ND	0.0001	10.0	
Toxaphene	ND	0.005	0.5	

ND - None Detected

CF - Bias Correction Factor

Source: Wadsworth/Alert Laboratories, 1990

hydroxide before it is discharged to the sewer system. This system is operated in a batch mode and neutralizes two batches, approximately 800 to 900 gallons of effluent, a day. The tank is cleaned periodically and the sludge is removed from the tank onto a cart and then to the landfill hopper (SWMU 15).

Date of Startup: 1988

Date of Closure: The unit is operational.

Wastes Managed: Acid mixture, mainly dilute nitric acid, from the acid-wash process and the sludge from the tank after the tank is cleaned periodically.

Release Controls: The wastewater from the tank is monitored by a pH meter before it is discharged to the sewer system through floor drains. The tank is located indoors on a concrete floor.

History of Release: No documented releases were identified during the PA/VSI.

Observations: The tank appeared to be structurally sound. The area near the cart was smeared with white boron nitride powder.

SWMU 14

Chemical Vapor Deposition (CVD) Process Neutralization System

Unit Description: The unit consists of three 500-gallons concrete tanks located just below ground surface, underneath steel plates and steel gratings, at the western end of Building 12 of the west central portion of the facility. Figure 2 presents the location of this unit, and Photographs 18 through 19 in Attachment B depict this unit. The tanks are connected in series. Sodium hydroxide is added to the first tank to raise the pH of the mixture. The second and the third tanks are used for mixing until the neutralized wastewater from the third tank is discharged to the sewage system.

Date of Startup: 1988

Date of Closure: The unit is operational.

Wastes Managed: Hydrochloric acid mixture from the CVD vacuum furnace.

Release Controls: The wastewater from the tanks is monitored by a pH probe at the third tank before it is discharged to the sewage system. The probe is connected to an alarm system that will sound if the wastewater to be discharged is not within the specified pH ranges.

History of Release: No documented releases were identified during the PA/VSI.

Observations: The conditions of the three tanks could not be observed during the PA/VSI. No evidence of release was observed.

SWMU 15**Landfill Hopper**

Unit Description: The unit consists of an open 40-cubic-yard landfill hopper, located on barren ground at the south central edge of the facility. Figure 2 presents the location of this unit, and Photograph 20 in Attachment B depicts this unit. The hopper is used to store sludge from the two neutralization systems of the Grafoil and the BN processes, SWMUs 12 and 13 respectively, and dusts from dust collectors (SWMU 16). The wastes are transported offsite by Arco Disposal to a landfill about two times a week.

Date of Startup: 1989

Date of Closure: The unit is operational.

Wastes Managed: Sludge from the two neutralization systems of the Grafoil and the BN processes, SWMUs 12 and 13 respectively, and dusts from dust collectors (SWMU 16).

Release Controls: No release controls were identified during the PA/VSI.

History of Release: No documented releases were identified during the PA/VSI.

Observations: The hopper was hauled offsite during the PA/VSI, and therefore was not observed. Dry graphite flakes were observed on the ground at the area.

SWMU 16**Dust Collectors**

Unit Description: Dust collectors collect dust generated at various stages in the BN process. Figure 2 presents the location of this unit, and Photographs 22 through 23 in Attachment B depict this unit. Twelve dust collectors are used in the BN process. They are located in Building 10. Small particulates from these dust collectors are recycled back to the calciner and the bigger particulates are sent to the crusher for size reduction before they are recycled back to the calciner. Some of the dusts are first collected by drums and then sent to the landfill hopper (SWMU 15) before the dust is transported offsite. One dust collector for the intermetallic BN process is located outdoor outside Building 12A. Dust from this collector, mainly carbon particulates, is collected in drums that are sent to the landfill hopper (SWMU 15) before hauled offsite and disposed of at a landfill. Approximately three drums of dust are collected every month from this process.

Date of Startup: 1989-90

Date of Closure: All dust collectors are operational.

Wastes Managed: Dust generated at various stages of the BN and the intermetallic BN processes.

Release Controls: Each dust collector has at least one filter; some have double filters.

History of Release: No documented releases were identified during the PA/VSI.

Observations: The dust collectors and their associated drums appear to be in good condition. No evidence of release was observed.

SWMU 17

Spent Methanol Satellite Accumulation Area

Unit Description: This unit is located in an area, approximately 5 feet by 10 feet, in a room on the ground floor of Building 10. Figure 2 presents the location of this unit, and Photograph 24 in Attachment B depicts this unit. During the BN operation, methanol is used in a soaking process to improve the BN product's purity. Spent methanol is collected in a 55-gallon drum at the unit. Once a drum is filled, it is sent to Hazardous Waste Storage Pad A (SWMU 1), where it will be transported offsite. Approximately three drums of methanol are generated each month.

Date of Startup: Mid 1980s

Date of Closure: This unit is operational.

Wastes Managed: Spent methanol from the BN process.

Release Controls: The spent methanol is stored in drums inside the building on a concrete floor. All drums are connected with cables for grounding.

History of Release: No documented releases were identified during the PA/VSI.

Observations: Two 55-gallon drums were observed at the time of inspection. One drum was empty and the other one contained spent methanol. The drums appeared to be in good condition. No evidence of release was observed.

4.0 AREAS OF CONCERN

PRC identified one AOC during the PA/VSI. This is discussed below.

AOC 1

Former Coal and Tar Storage Area

The former coal and tar storage area was located southeast of Building 10B, south of Building 7, and was used to store coal and tar for various processes at the facility. The exact area it occupied is unknown and its operation dates are also unknown. It is believed that coal storage was related to the early baking operation with on-site production of producer gas. Soil samples taken from a soil boring southwest of the area detected 1,2-dichloroethene at 5 ppb; toluene at 3 ppb; benzene at 36 ppb; and ethylbenzene at 4 ppb. Coal was stored in piles on barren ground and coal tar was believed to be stored in an above-ground tank (Frye, 1991). The tar tank was dismantled and no longer exists. The concentrations of the VOCs detected might indicate that tar from the former tar pit has infiltrated the shallow subsurface in the vicinity of the soil boring. This is substantiated by the emergence of a tar-like liquid that has seeped into the brick-lined firepond near the former tarpit location. In the past, the firepond was used as a potential source for firefighting water. Table 9 presents the ground-water analytical results for inorganics, VOCs, and semi-VOCs at the fire pond. The seepage is approximately 8 to 9 feet below ground surface. This is an area of concern because of the possible contamination of the soils and ground water by the tar and the tar-like seepage.

Table 9

**Ground Water Analytical Results for Inorganics, VOCs, and Semi-VOCs at the Firepond
November 1989**

Constituent	Units	Concentration
BOD	mg/l	1.80
Cyanide	mg/l	<0.010
COD	mg/l	50.0
Specific Conductance	mg/l	686
Formaldehyde	mg/l	<0.055
Nitrate	mg/l	0.854
Oil and Grease	mg/l	8.99
Phenol	mg/l	92.7
TOC	mg/l	5.75
Silver	mg/l	<.010
Aluminum	mg/l	<.2
Arsenic	mg/l	<.010
Barium	mg/l	<.2
Boron	mg/l	8.770
Cadmium	mg/l	<.005
Chromium	mg/l	<.010
Copper	mg/l	<.025
Mercury	mg/l	<0.0002
Nickel	mg/l	<.040
Lead	mg/l	<.005
Selenium	mg/l	<.005
Zinc	mg/l	<.020
PAHs (Polynuclear Aromatic Hydrocarbons)		
Carbazole	µg/l	4.77
Naphthalene	µg/l	57.9
Acenaphthylene	µg/l	75.5
Acenaphthene	µg/l	112

Table 9 (Continued)

**Ground Water Analytical Results for Inorganics, VOCs, and Semi-VOCs at the Firepond
in November 1989**

Constituent	Units	Concentration
Fluorene	µg/l	<0.200
Phenanthrene	µg/l	1.53
Anthracene	µg/l	0.844
Fluroanthene	µg/l	0.588
Pyrene	µg/l	2.80
Benzo(a)anthracene	µg/l	0.209
Chrysene	µg/l	0.677
Benzo(b)fluoranthene	µg/l	0.094
Benzo(k)fluoranthene	µg/l	0.035
Benzo(a)pyrene	µg/l	<0.020
Dibenzo(a,h)anthracene	µg/l	<0.030
Benzo(ghi)perylene	µg/l	<0.050
Indeno(1,2,3-cd)pyrene	µg/l	<0.050
VOCs (Volatile Organic Compounds)	µg/l	ND

ND = Not Detected

< = Not Detected Above this Listed Detection Limit

Source: Geraghty & Miller, 1990

RELEASED
DATE 12-7-96
RIN # 2794-94
INITIALS MD

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5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified 17 SWMUs and 1 AOC at the UCAR facility. Background information on the facility's location, operations, waste generating processes, release history, regulatory history, environmental setting, and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, release history, and observed condition, is discussed in Section 3.0. AOCs are discussed in Section 4.0. Following are PRC's conclusions and recommendations for each SWMU and AOC. Table 10 identifies the SWMUs and AOCs at the UCAR facility and suggested further actions.

SWMU 1

Hazardous Waste Storage Pad A

Conclusions:

The potential for release to environmental media is low because this unit is located on a 6-inch concrete pad and has good secondary containment. The unit has a sump, a 4-inch-high concrete curbing, and an elevated entrance ramp. The unit is inaccessible, surrounded by a 7-foot steel-wire fence, which is always locked. The potential for release via environmental media is summarized below.

Ground Water: Low. The unit is on a 6-inch reinforced concrete pad and slopes to an 18-inch diameter, 23-inch-deep sump that is designed to collect any spillage or leakage from the drums stored at the unit. The unit also has a 4-inch-high concrete curbing that prevents any spillage from reaching the surrounding ground.

Surface Water: Low. The facility is approximately 1 mile south of Lake Erie and 2-1/2 miles east of the Rocky River, which drains to Lake Erie. Sound secondary containment for the unit limits the possibility of release to surface water. Any surface water runoff from the unit would go into the storm-water sewers and the water would be treated at the City of Lakewood's Publicly Owned Treatment Works (POTW) before it is discharged to Lake Erie.

Air: Low. The storage drum was in good condition and the lid on the drum was closed at the time of inspection. However, a contaminant could be released into the air if the integrity of the drums is breached or a spill occurs. The waste contains volatile organic material.

On-site Soils: Low. Any leakage or spillage from the drums would be collected by the sump. The unit is surrounded by a 7-foot-high steel-wire fence that is always locked.

Recommendations:

The unit is being closed under the supervision of Ohio EPA. No further action is recommended at this time.

REL
DATE 10-7-96
RIN # 2799-96
INITIALS MV

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Table 10

SWMU and AOC Summary

SWMU	Operational Dates	Evidence of Release	Suggested Further Action
1. Hazardous Waste Storage Pad A	1980 to present	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	The unit is being closed under the supervision of Ohio EPA. No further action is suggested at this time.
2. Hazardous Waste Storage Pad B	1980 to present	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	The unit is being closed under the supervision of Ohio EPA. No further action is suggested at this time.
3. Hazardous Waste Storage Pad C	1980 to 1982	Soil samples' analytical results showed soil contamination during closure operations.	Further soil samplings were required by Ohio EPA to determine the extent of soil contaminations at the unit. The unit is being closed under the supervision of Ohio EPA. No further action is suggested at this time.
4. Hazardous Waste Storage Tank D	1976 to 1988	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	The unit is being closed under the supervision of Ohio EPA. No further action is suggested at this time.

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Table 10 (continued)

SWMU and AOC Summary

RELEASED

DATE 12-7-76

RIN # 2794-96

INITIALS YW

SWMU	Operational Dates	Evidence of Release	Suggested Further Action
5. Flue Area	1957 to 1976	Analytical results of ground water and soil samples from the area revealed presence of VOCs.	<p>Continue to monitor the sump system's effectiveness. Sample and analyze the sump fluids for metals, inorganic compounds, phenol-formaldehyde, furfuryl alcohol, and VOCs once a year. Submit the analytical results to U.S. EPA and Ohio EPA for review.</p> <p>Continue to annually sample and analyze ground water samples from the monitoring wells for metals, inorganic compounds, phenol-formaldehyde, furfuryl alcohol, and VOCs. Submit the analytical results to U.S. EPA and Ohio EPA for review.</p>
6. Former Landfill Area	1920s to 1973	Soil samples' analytical results show soil contamination of metals, inorganic constituents, and VOCs.	Continue to sample and analyze ground water for metals, inorganics and VOCs, and submit the analytical reports to U.S. EPA and Ohio EPA for review.

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Table 10 (continued)
SWMU and AOC Summary

RELEASED
DATE 10-7-96
RIN # 2794-96
INITIALS JV

SWMU	Operational Dates	Evidence of Release	Suggested Further Action
7. Former Incinerator Area	Early 1970s to 1973	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	Sample and analyze the soils from the barren area where the incinerator formerly was located. Submit the analytical results to U.S. EPA and Ohio EPA for review.
8. Former Storage Area A	Early 1970s to 1986	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	Determine if the unit is empty, and if it is not, wastes should be removed from the unit. Determine the integrity of the unit. Submit the integrity test results to U.S. EPA and Ohio EPA for review.
9. Former Storage Area B	1940s to 1964	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	Determine if the unit is empty, and if it is not, wastes should be removed from the unit. Determine the integrity of the unit. Submit the integrity test results to U.S. EPA and Ohio EPA for review.
10. Former Used Oil and Empty Drums Storage Area	1987 to Present	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	Drums with hazardous waste labels should be removed from this unit.

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Table 10 (continued)
SWMU and AOC Summary

RELEASED
DATE 12-2-96
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SWMU	Operational Dates	Evidence of Release	Suggested Further Action
11. Scrap Pit	Unknown to Present	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	No further action is suggested at this time.
12. Grafoil Process Neutralization System	1965 to Present	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	Continue to monitor the pH meters.
13. Boron Nitride Process Neutralization System	1988 to Present	The area near the cart was smeared with white boron nitride powder.	Continue to monitor the pH meters. Provide a secondary containment for the area around the cart.
14. Chemical Vapor Deposition Process Neutralization System	1988 to Present	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	Continue to monitor the pH meter.
15. Landfill Hopper	1989 to Present	Dry graphite flakes were observed on the ground at the area.	Provide a secondary containment for the area around the hopper.
16. Dust Collectors	1989-1990 to Present	No evidence of release was noted in the file review and no visible evidence of release was observed during the inspection.	No further action suggested at this time.